

# Bulkheading...A Habit We Just Can't Kick

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## Abstract

In 1993 Thurston Regional Planning Council (TRPC) inventoried the Puget Sound shorelines within Thurston County. This initial effort resulted in a digital data base and a tabulation of shoreline armoring over time. Efforts were made to identify the type, location and date when bulkheads were installed using 1977 as the base year. The project documented the difficulty of accurately documenting these factors without the permit tracking system begun in 1984. A historical rate of bulkheading activity, both Countywide and by inlet was established. For Thurston County the length of armored shorelines more than doubled (110 percent increase) during the 1977-1992 time period.

In 1999 TRPC completed an update of this project and the results are surprising. Less than 100 feet of new marine shoreline has been armored in the last two years. Fewer permits are being issued and repairs are now including "footing" or bulkheads for bulkhead. Footing are becoming more common as beaches are being eroded. With all the bad news regarding near shore habitat loss, some good news is nice. What are the potential effects on the rest of Puget Sound given these trends? What techniques can be learned regarding bulkhead inventories? What successful local management strategies have been accomplished, without substantial changes to State Law?

## Background

Thurston County is one of the smaller counties in Washington State. It ranks 32<sup>nd</sup> in size with a little more than 714 square miles in land area. But Thurston County is 8<sup>th</sup> in statewide population. With Olympia as the state capital, the county has experienced rapid growth during the last few decades. When the State Shoreline Management Act was adopted by the voters in 1972, the population of the county was 80,500 and increased to 203,500 in the year 2000.

Increased population has lead to increased impacts on Thurston County's approximately 110 miles of Puget Sound shoreline. Most of these shorelines are residential in character but the 6.5 miles that lie within the city of Olympia support a port and hence has a more urban character. Other natural areas include a sizable portion of the Nisqually Wildlife Refuge, the Woodard Bay Natural Resources Conservation Area, Tolmie State Park and a number of county and local parks.

Thurston Regional Planning Council (TRPC), the regional council of governments for Thurston County, has been collecting data about the armoring of marine shoreline in unincorporated Thurston County for some time. The effort began in 1985 with a data collection system for bulkhead permits. This data was used by TRPC in preparation of a report in 1993 on the status of the marine shoreline. In 1996 this bulkhead data was updated and mapping was field checked.

Newly refined estimates indicate that when the Shoreline Management Act was adopted, Thurston County had approximately 28.0 miles of armored marine shoreline constituting 27 percent of its total marine shoreline. Between that time and 1999, armoring has increased to 37.8 miles. This represents an increase of 74 percent and 9.8 miles of new armoring that has been approved under the Shoreline Management Act. In addition to the new permits, between 1985 and 1999, permits for repairs to existing bulkheads totaled another 17.6 miles. These new estimates are believed to be more accurate than those contained in the 1993 report, because of problems dealing with the GIS mapping.

## Shoreline Bulkhead Exemptions

Seven local jurisdictions within Thurston County adopted a regional shoreline master program in 1976. It is known that bulkhead permits were reviewed and approved even prior to that, though there are few existing records. Bulkheads for a single family residence are allowed (subject to review) by an exemption to the

Shoreline Management Act (SMA). Further, these single family bulkheads are also not reviewed by the Washington State Department of Ecology, since they normally do not require a Substantial Development Permit. These provisions can be found in:

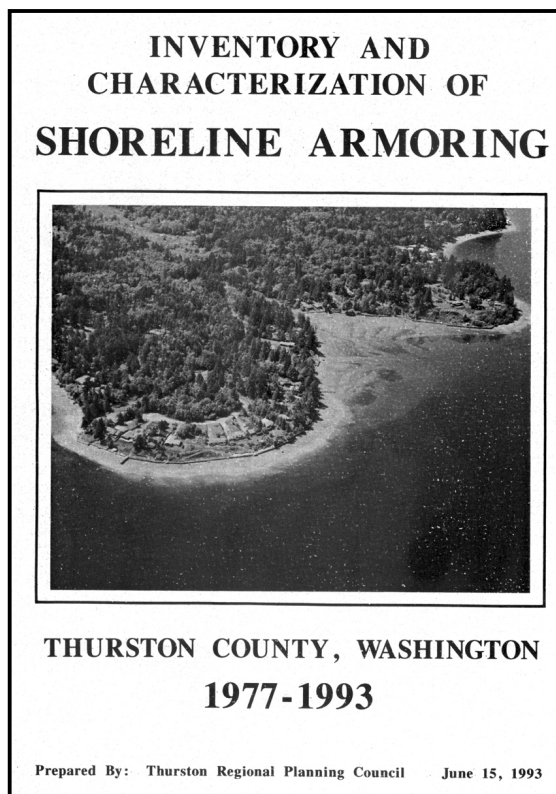
RCW 90.58.030 Definitions and concepts.

(e) "*Substantial development*" shall mean ... except ... the following ...

(ii) Construction of the normal protective bulkhead common to single family residences, ...

Changes were made in 1992 to the SMA regarding the threshold requirements for single family residential bulkheads. However, they still provided for marine bulkheads subject to the review of local shoreline administrators.

## Thurston County's Wake-up Call



So when did Thurston County get its wake-up call regarding bulkheads? The event that started things was a 1990 single-combined permit from seven adjacent property owners (and coordinated by the same bulkhead contractor) for a new bulkhead of 1,200 feet in length. This was almost a quarter mile of shoreline and caused county staff to brief the Board of County Commissioners on the potential implications and the long term impacts.

The County Commissioners soon wrote a letter to the State Department of Ecology requesting that they undertake an Environmental Impact Statement on the cumulative impacts of bulkheading in Puget Sound. In response Ecology provided TRPC and the American Littoral Society with a grant to explore this condition. The resulting report was called *Inventory and Characterization of Shoreline Armoring in Thurston County, Washington: 1977-1993*.

The report discovered shoreline armoring was starting. In one year *Total Armoring* increased from 1,175 ft in 1985 to 11,457 ft in 1986 (a tenfold increase). The report also discovered that permits for *Total Repairs* peaked in 1988 with 13,394 ft or about 2.5 miles and *New Armoring* peaked the following year in 1989 with 13,394 ft or 2.5 miles. While these permits were all issued in

compliance with the local shoreline master program, the report concluded that serious cumulative impacts must be occurring on Puget Sound simply by the magnitude of the impacts within Thurston County.

Tables 1, 2 and 3 summarize the marine shoreline conditions in Thurston County though 1999. Some inlets are more than one-half armored, while others are more natural. These geographic variations are not surprising. What was surprising was the dramatic reduction of bulkheading since 1995 indicated in Table 3. *Total Bulkhead Permits* were down by 50% per year, *Bulkhead Repairs* were down by 71%, *New Bulkheads* down by 88% per year and *New Footings* (which are bulkheads in front of existing bulkheads) amounted to 80% of the footage of *Bulkhead Repairs* for 1999. So, what caused this environmentally positive reduction in the amount of shoreline bulkheading during the last five years?

Table 1. Thurston County Armored Shorelines – 1999 (in miles)

<b>Inlet</b>	<b>Shoreline</b>	<b>Armored</b>	<b>%</b>
Totten Inlet	14.0	3.1	21.9
Eld Inlet	34.8	13.6	39.0
Budd Inlet*	14.1	7.1	50.5
Henderson Inlet	25.4	5.7	22.4
Nisqually Reach	14.0	8.3	55.6
<b>Total</b>	<b>103.3</b>	<b>37.8</b>	<b>36.6</b>
*=Olympia not included			

Table 2. Thurston County Bulkhead Permits: 1985 – 1999

Total – All Types	538 Bulkhead Permits	Average 36 permits
Repaired	63,749 ft (12.1 miles)	Average 4,249 ft.
Added New	24,894 ft (4.7 miles)	Average 1,657 ft.

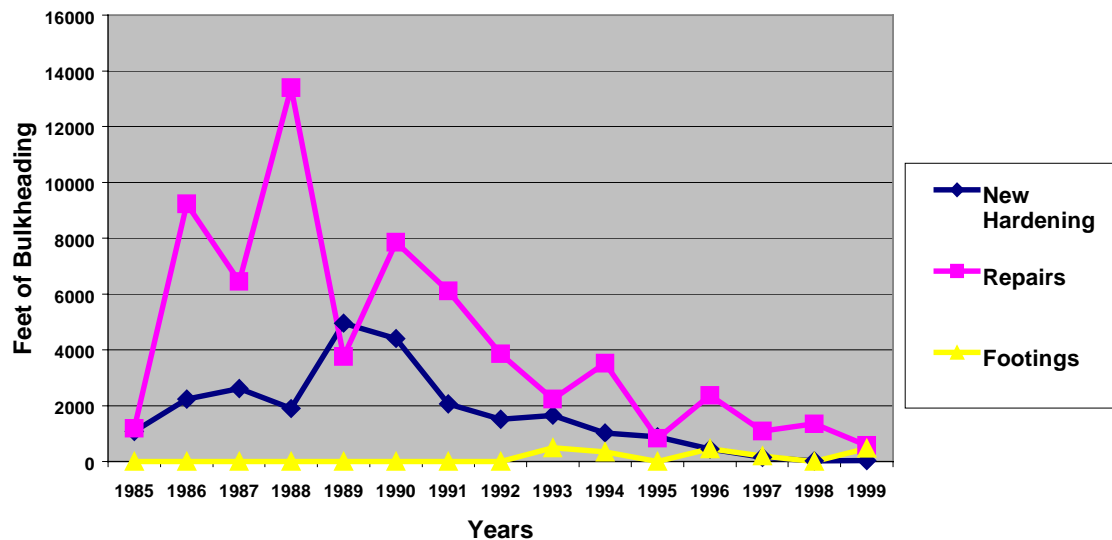
Table 3. Thurston County Bulkhead Permits: 1995 – 1999

Total – All Types	90 Bulkhead Permits	Average 18 permits
Repaired	6,202 ft (1.2 miles)	Average 1,240 ft.
Added New	1,506 ft (0.3 miles)	Average 301 ft. (874-436-147-20&29 ft/year)

## Which Worked Better – Shoreline Master Program or Critical Areas?

TRPC updated the regional shoreline master program in 1986. The updated SMP includes new standards for when single family residential bulkheads would be allowed. These are summarized below. While the new SMP likely reduced the on-site construction impacts, based upon Figure 1 it does not appear to have affected the construction of bulkheads, which peaked in 1988 and 1989. If the SMP updates were not effective, then what caused the reduction in bulkhead construction? (See Figure 1)

<u>Shoreline Master Program for the Thurston Region (1986)</u> Chapter 18. Shoreline Protection - General Regulations	
4. Protective structures shall be allowed only when evidence is presented that one of the following conditions exists:	
A.	Erosion or an active feeder bluff is threatening ... - Agricultural land, - Public roads or bridges, - Existing structures, or - Areas of unique public interest.
B.	It is necessary to the operation and location shoreline development and related activities consistent with this Master Program.
C.	The request is for a repair or replacement of an existing protection device.



**Figure 1.** Thurston County Shoreline Armoring (1985-1999)

Even before the 1993 TRPC armoring report was completed, Thurston County staff realized they needed a new regulatory tool to address marine bulkheading. They found it in the adoption of “*Marine Bluff Review*” standards for their Critical Areas Ordinance (CAO). These standards were adopted in 1993 and updated in 1996. The county CAO was not limited to 200-foot shoreline jurisdiction, and could address upland and shoreline activities as linked. The provisions applied to all marine bluffs above 20 feet in height along Puget Sound.

The marine bluff review area extends back from the shoreline at a 2:1 slope. Development permits within this area are required to submit a Geotechnical Report and the vegetation on the slope and along the top of the bluff has to be retained to the greatest possible extent. The review applies to new and remodeled structures and there are provisions for a Reasonable Use Process where some sort of variance may be warranted. The CAO setback from the top of the bluff is usually greater than the SMP building setback for the water’s edge. (Refer to Figure 2 on the following page.) The CAO Marine Bluff Review was clearly the regulatory tool that caused the reduction in bulkhead construction, but effective permit administration by County staff also played a role.

## **Enforcement—The *Essential* Factor**

Adopting good standards does not immediately result in a change in behavior for property owners or contractors. So, enforcement of those new regulations is key. Providing an adequate level of staffing is one of the tougher balancing acts for local governments today. This requires finding technically trained staff and having departmental budgets that match the amount of work. Shoreline staff also need to be able to provide educational material to help explain the new regulations and how to meet the standards.

Enforcement always involves explaining what sorts of projects will likely be permitted and what will not. Your education efforts should also include the elected officials, since they will likely be the recipients of any appeals to the new standards. Doing something as simple as arranging a field trip (boat trip) with qualified experts can reap multiple benefits. Application of the new regulations needs to be fair and consistent. Staff need to realize they will be tested. They should also deny any permit that does not meet the standards. After a while, permit administration will become more routine, and a reputation—either good or bad—will be earned over time.

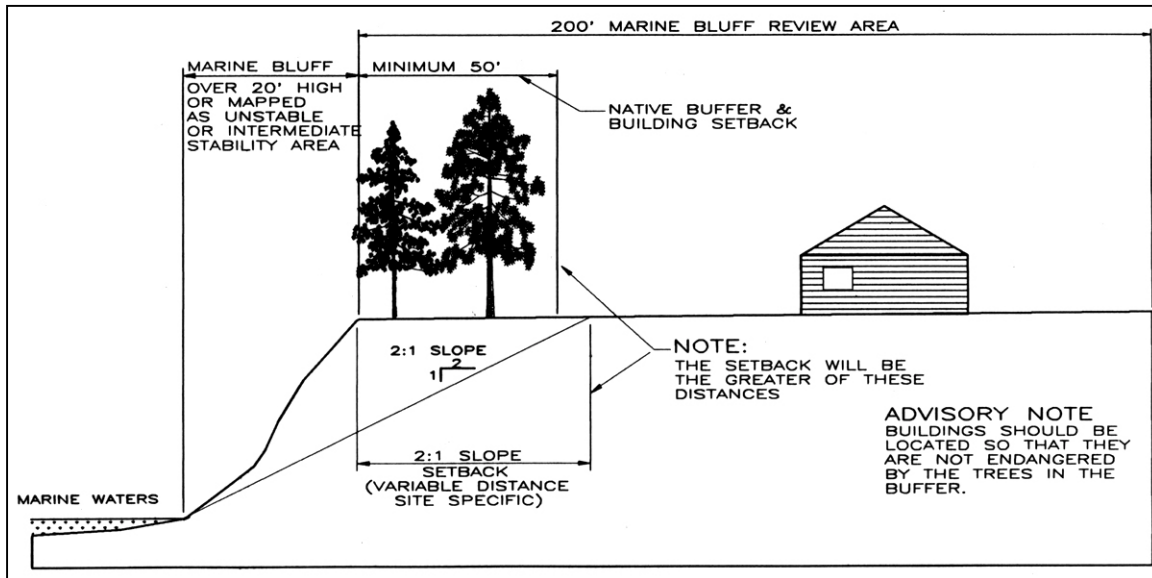


Figure 2. Thurston County Marine Bluff Review

Thurston County has shown that adopting more stringent shoreline standards is possible and that Critical Area regulations can be effective with or without improvements to the Shoreline Master Program. While the willie nillie construction of new bulkheads in Thurston County appears to now be under control, the next challenge for the county will be to better address the impacts associated with the 6,202 feet or 1.2 miles of bulkhead repairs which were approved in the last five years.

In conclusion, unless local governments are willing to: 1) ban all *Sunset* Magazines in Washington State, or 2) require all new shoreline property owners to take a GREEN IQ TEST, it is unlikely that shoreline armoring in Puget Sound will ever be stopped. While Thurston County has shown it is possible to dramatically reduce construction of new bulkheads, a total prohibition of all new bulkheads is virtually impossible until the bulkhead exemption in the Shoreline Management Act is removed.